

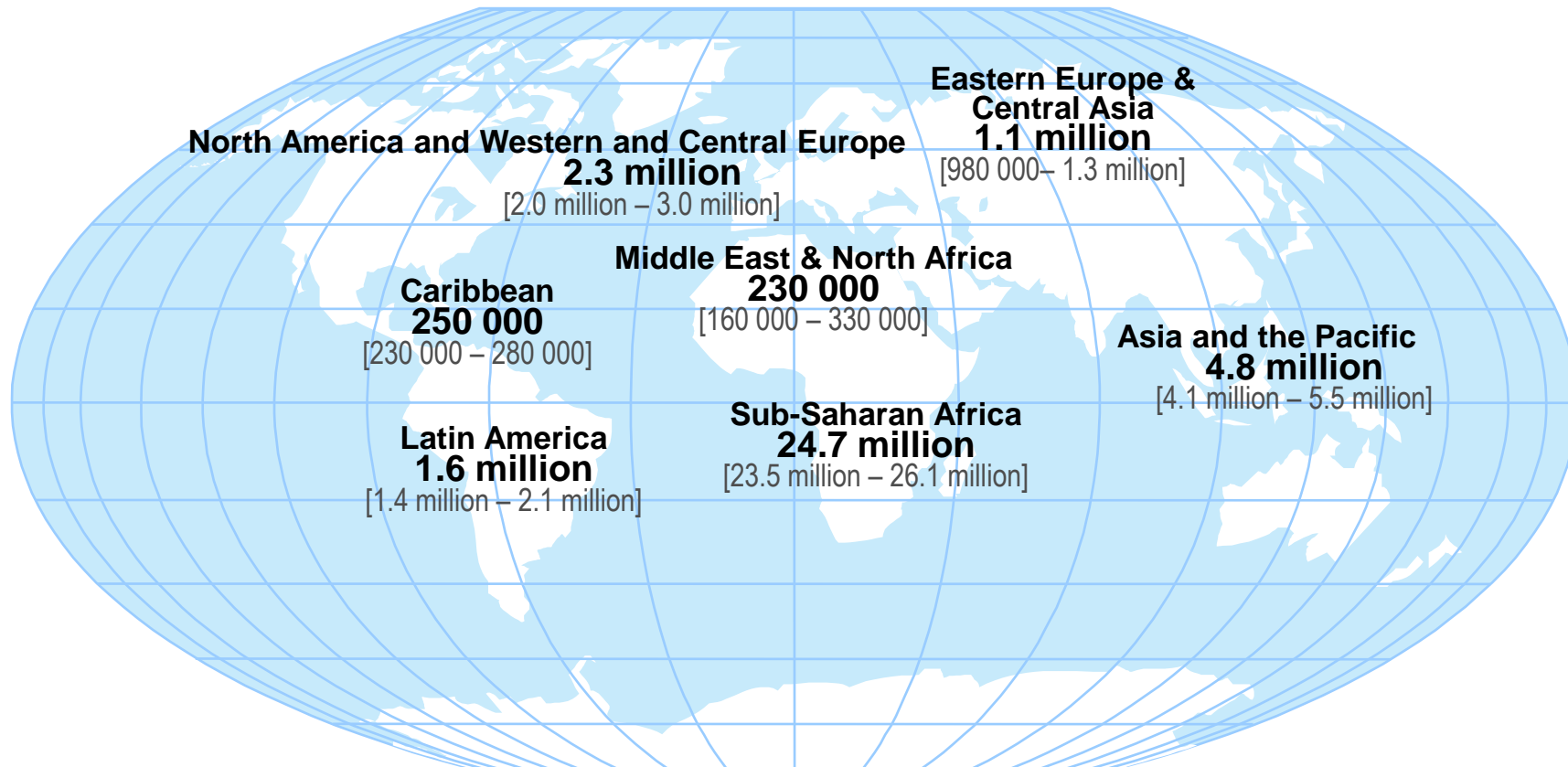
# Progresas gydyme nuo ŽIV

Giedrius Likatavičius

Birželio 12d. 2015

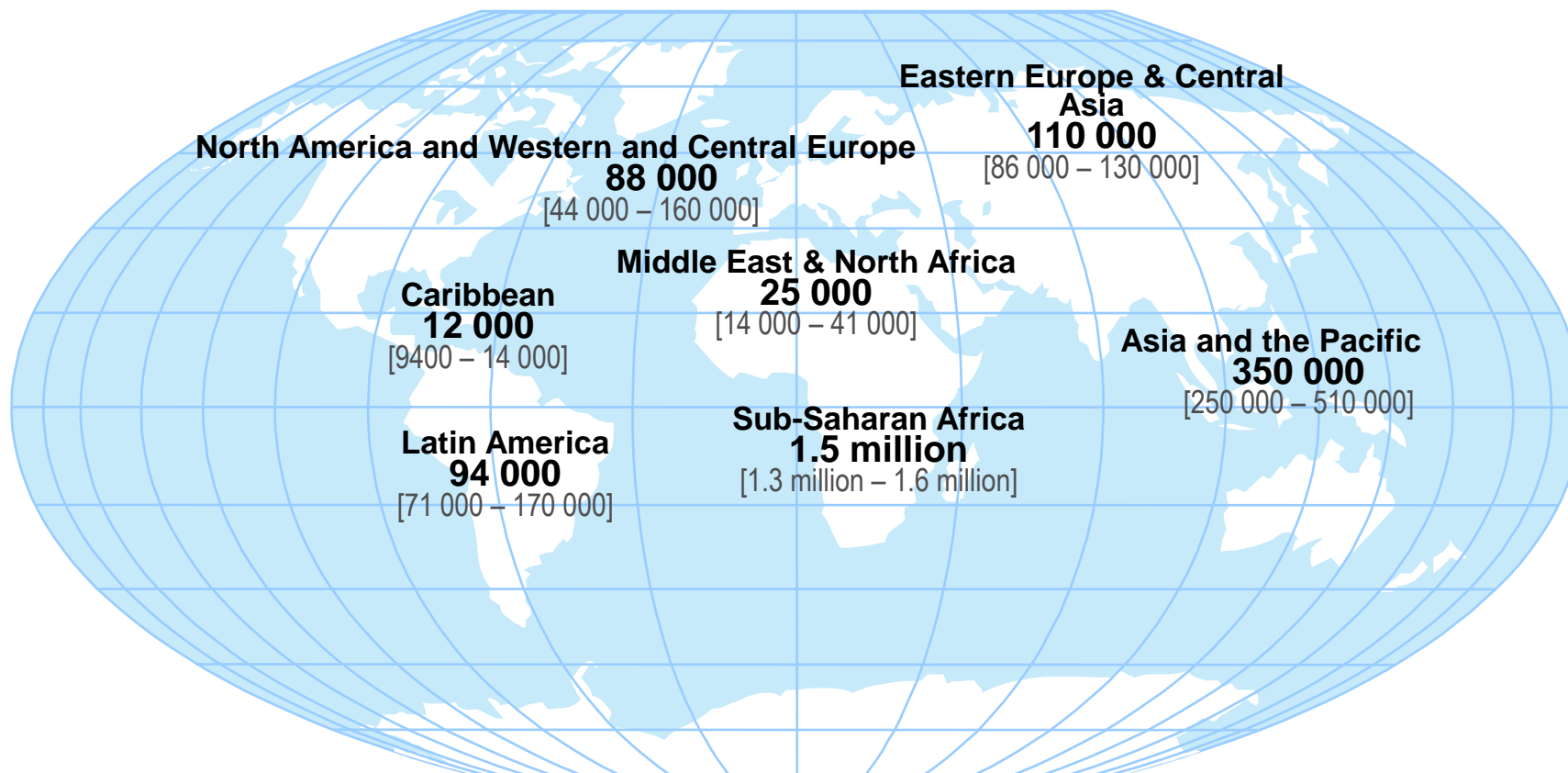
Klaipėda

# Adults and children estimated to be living with HIV | 2013



**Total: 35.0 million** [33.2 million – 37.2 million]

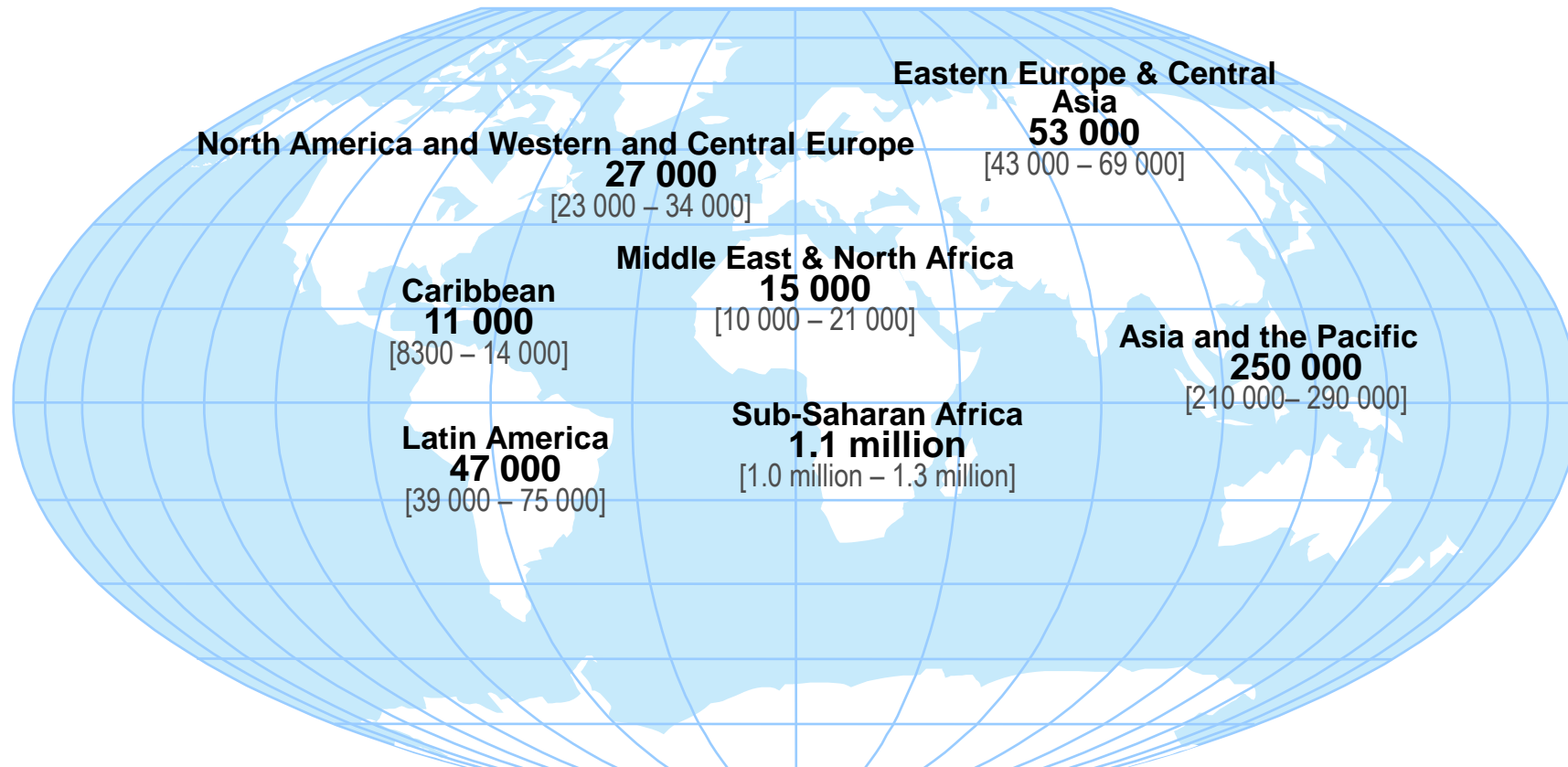
# Estimated number of adults and children newly infected with HIV | 2013



**Total: 2.1 million** [1.9 million – 2.4 million]

Source: UNAIDS

# Estimated adult and child deaths from AIDS | 2013



**Total: 1.5 million** [1.4 million – 1.7 million]

# HIV and AIDS in Europe



HIV infection remains of major public health importance in the European Union and European Economic Area (EU/EEA): there is no indication of a decline in transmission. Since the start of reporting on the HIV epidemic, more than 455 000 HIV diagnoses have been recorded in the EU/EEA. Marking World AIDS Day on 1 December, ECDC and the WHO Regional Office for Europe publish their annual surveillance report on HIV/AIDS.

## HIV

attacks the immune system and causes lifelong illness that may show no symptoms for many years. Treatment can stop progression to severe illness and AIDS.

## AIDS

indicates the end-stage of HIV infection resulting from the destruction of the immune system. It is defined by the presence of one or more opportunistic illnesses due to decreased immunity.

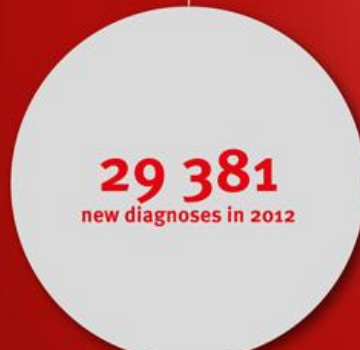
HIV infection

diagnosed with HIV

weak immune system

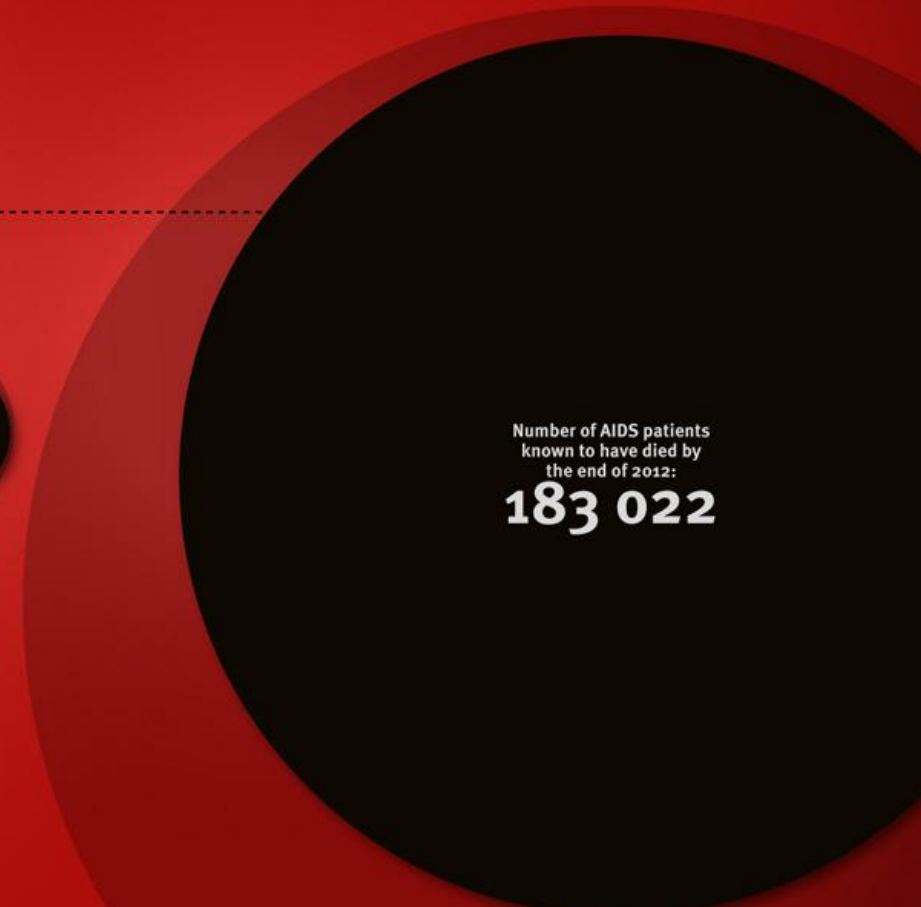
opportunistic infection

death



**4 313**  
AIDS diagnoses in 2012

**48%** less reported AIDS cases than 2006



## Test & protect!

Early testing helps to prevent transmission and lowers the risk of severe health complications.

More info: [www.ecdc.europa.eu](http://www.ecdc.europa.eu)

Follow us on twitter: @ecdc\_HIVAIDS

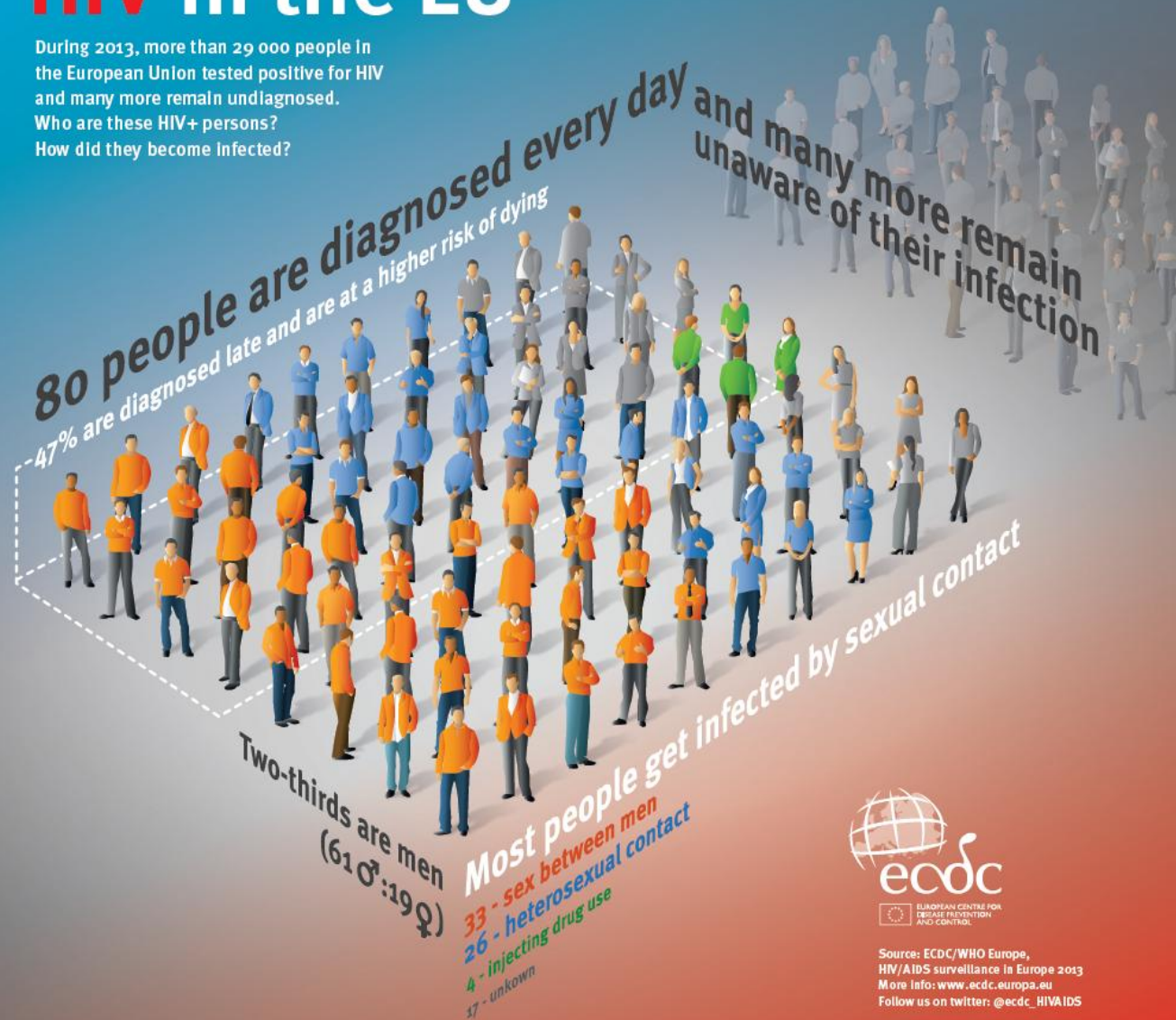
People diagnosed with AIDS in the EU/EEA since the beginning of the HIV epidemic until the end of 2012:

**334 299**



# HIV in the EU

During 2013, more than 29 000 people in the European Union tested positive for HIV and many more remain undiagnosed. Who are these HIV+ persons? How did they become infected?

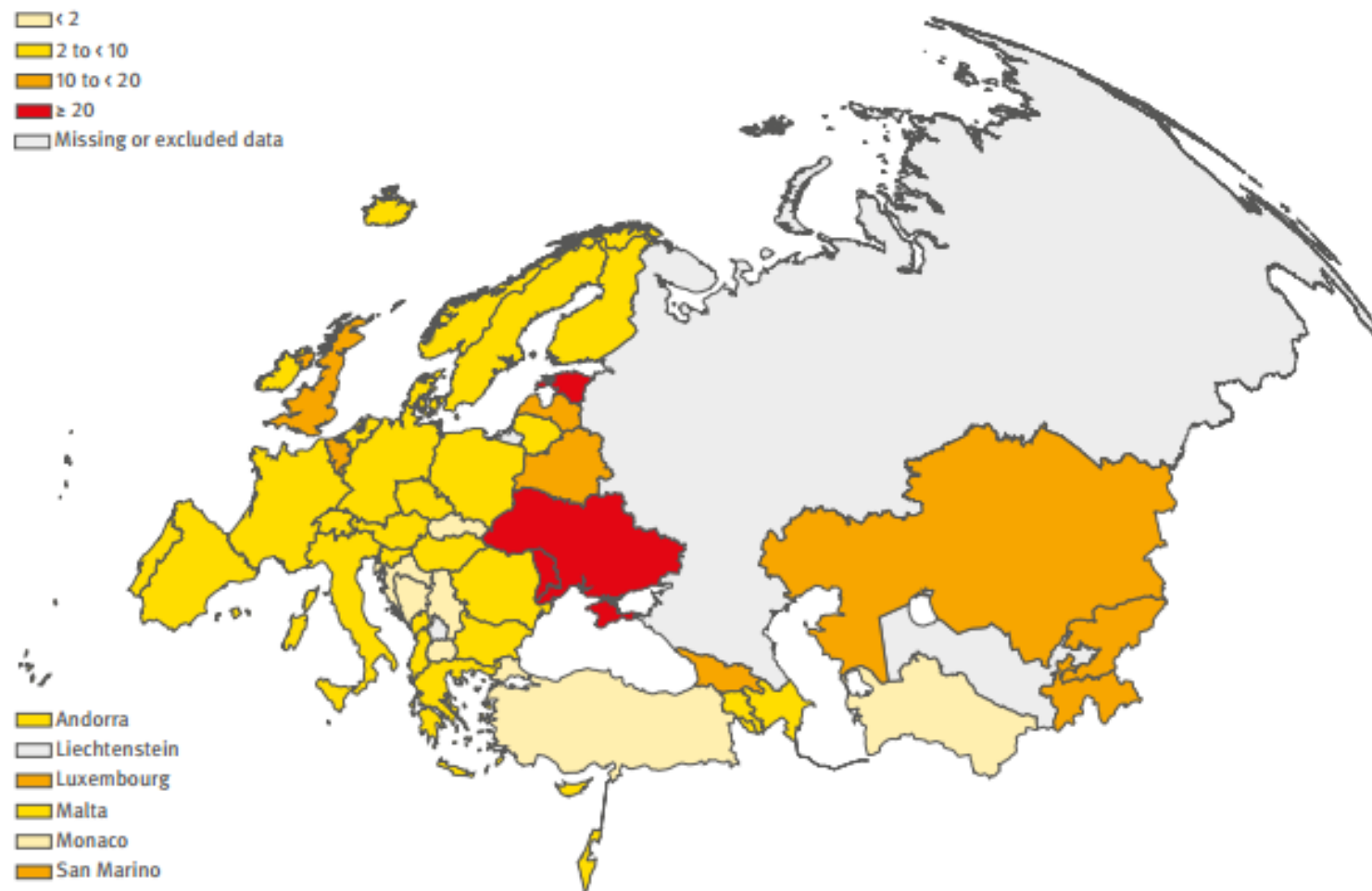


EUROPEAN CENTRE FOR DISEASE PREVENTION AND CONTROL

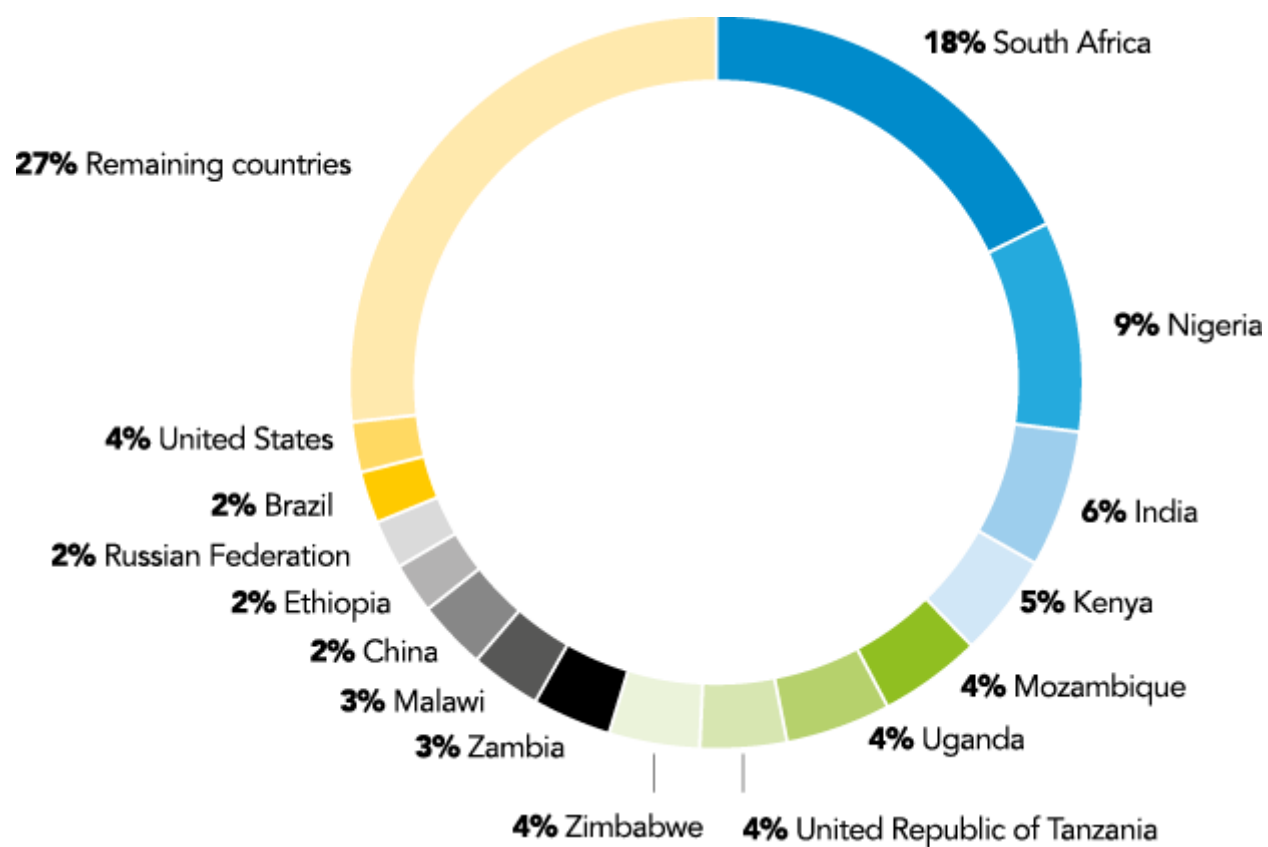
Source: ECDC/WHO Europe, HIV/AIDS surveillance in Europe 2013  
More info: [www.ecdc.europa.eu](http://www.ecdc.europa.eu)  
Follow us on twitter: @ecdc\_HIVAIDS

**Figure 2:** HIV infections, per 100 000 population, reported for 2010 (maps): All cases; heterosexual cases; people who inject drugs cases; men who have sex with men cases

**Map:** HIV infections, per 100 000 population, reported for 2012: All cases



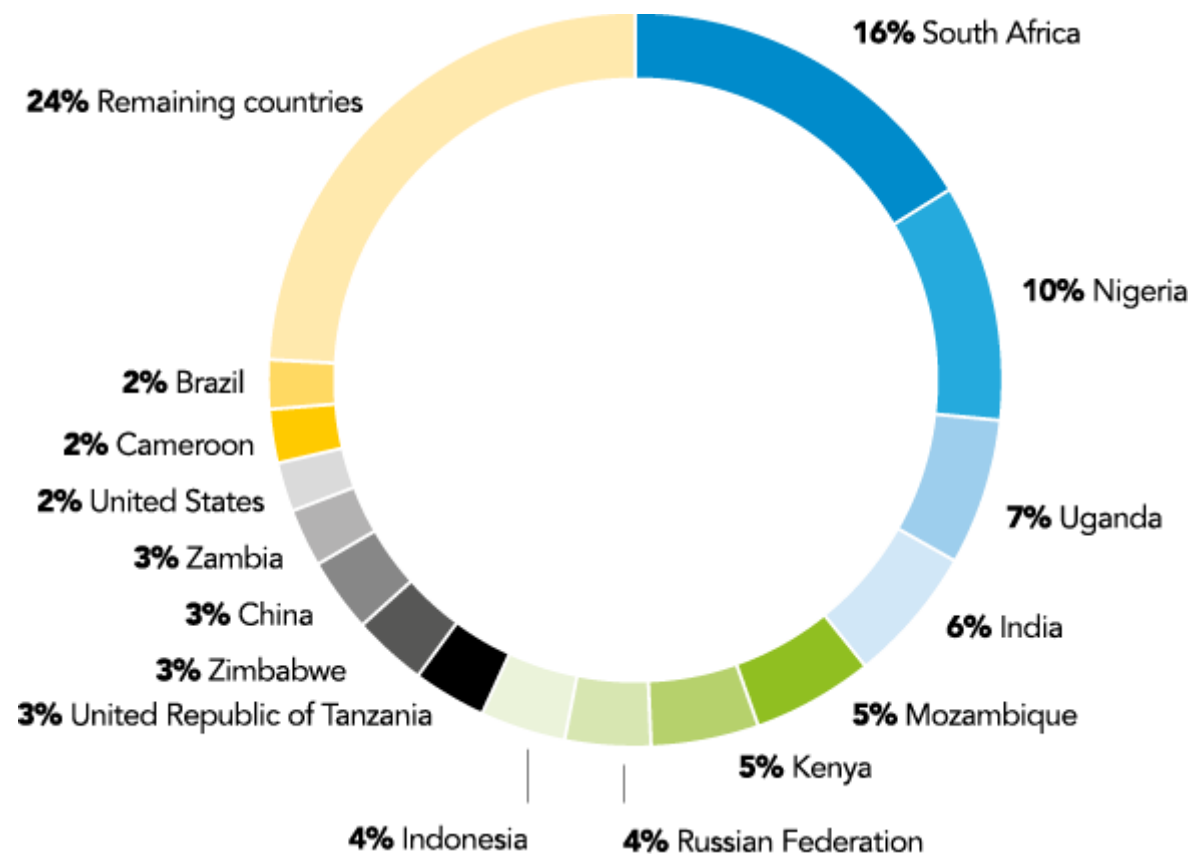
## People living with HIV by country, 2013



Source: UNAIDS

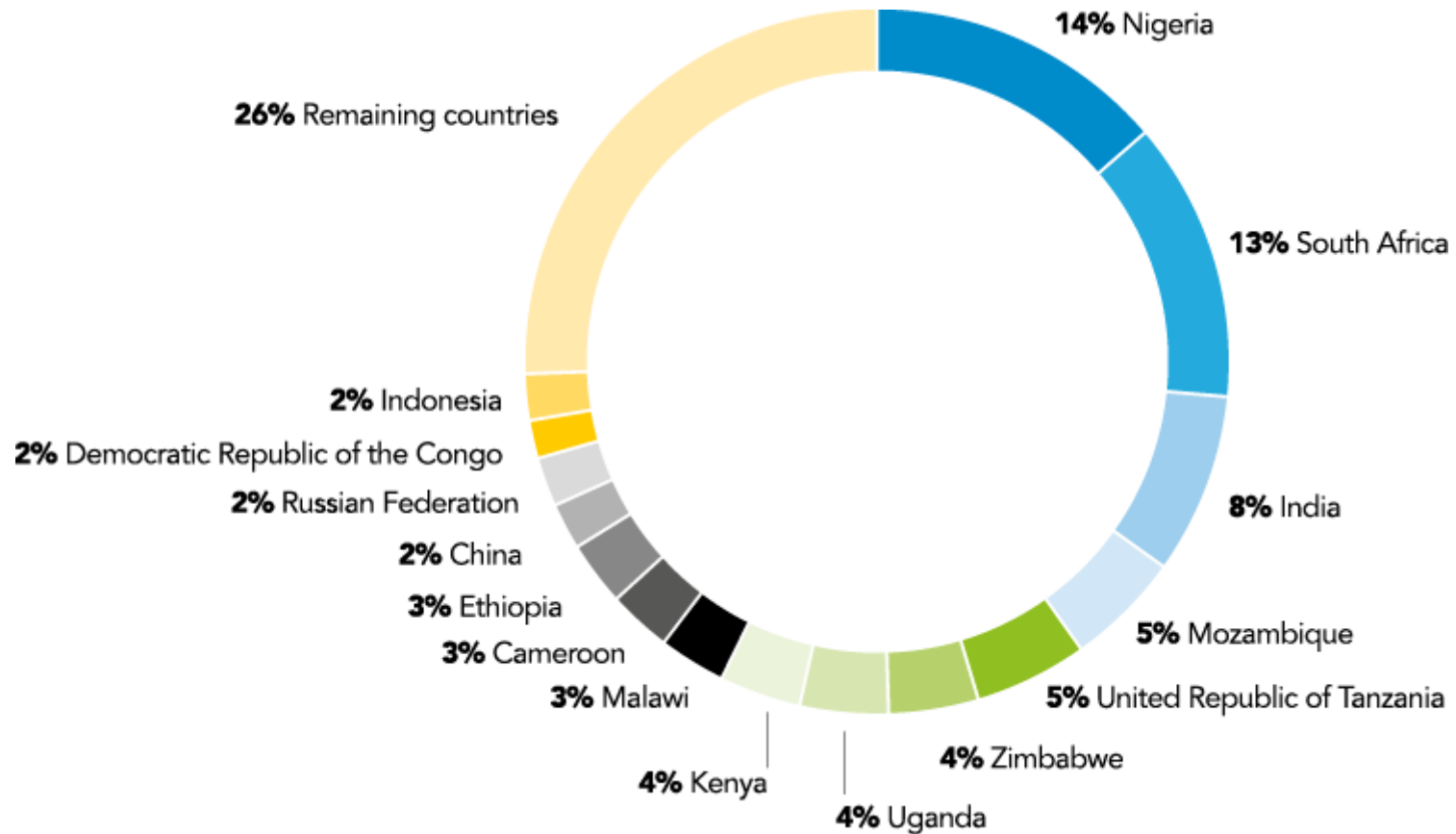


## Proportion of new HIV infections by country, 2013



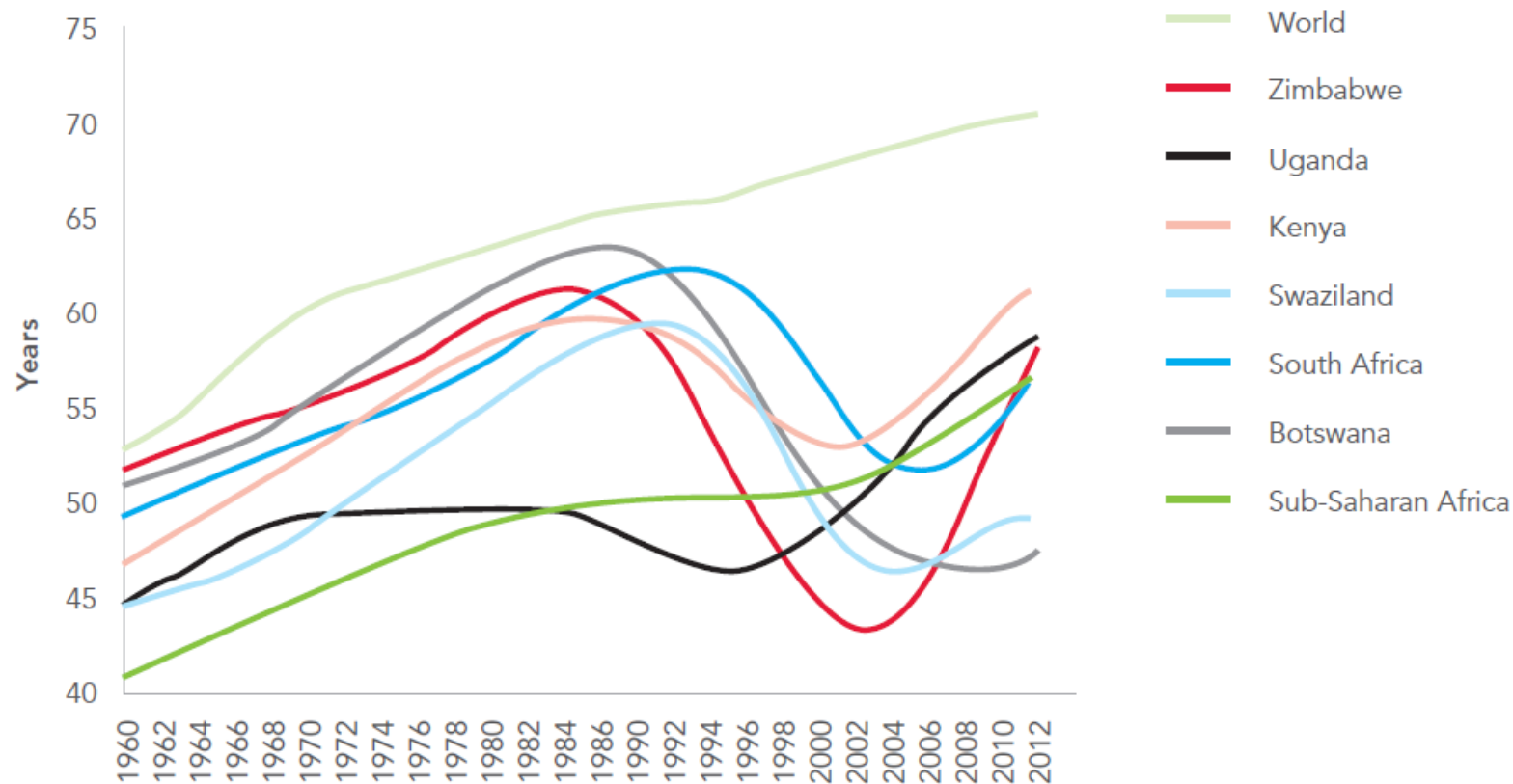
Source: UNAIDS

## AIDS deaths, globally, 2013



Source: UNAIDS

# Gyvenimo trukmės tendencijos AIDS epidemijos kontekste



Source: The World Bank life expectancy data. <http://data.worldbank.org/indicator/SP.DYN.LE00.IN>. Accessed 15 September 2014.

## THE TREATMENT TARGET




90%

diagnosed



90%

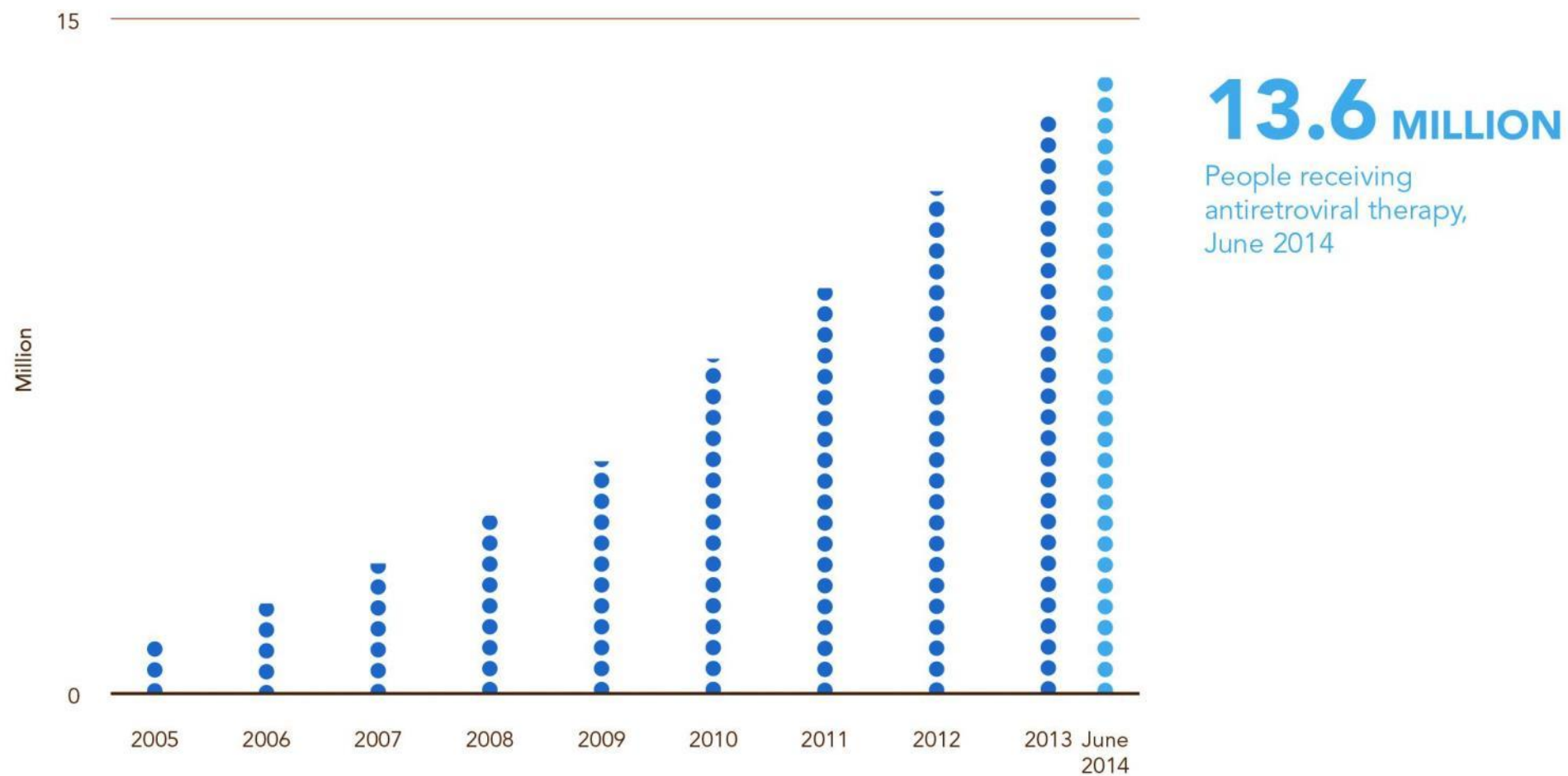
on treatment



90%

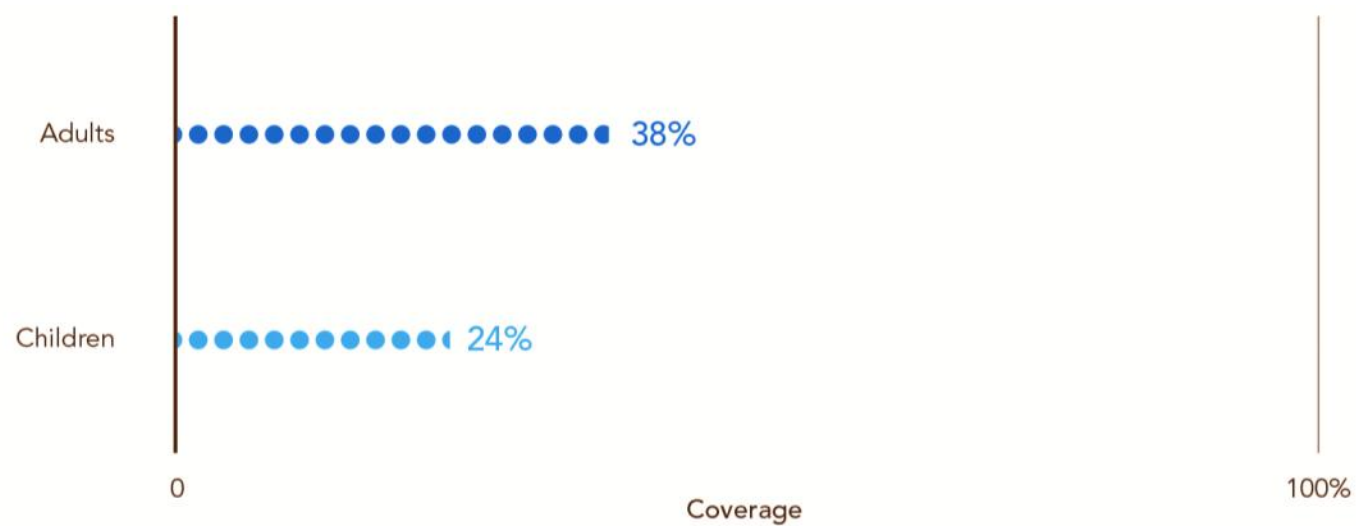
virally suppressed

## People receiving antiretroviral therapy, 2005 to June 2014, all countries



Source: UNAIDS

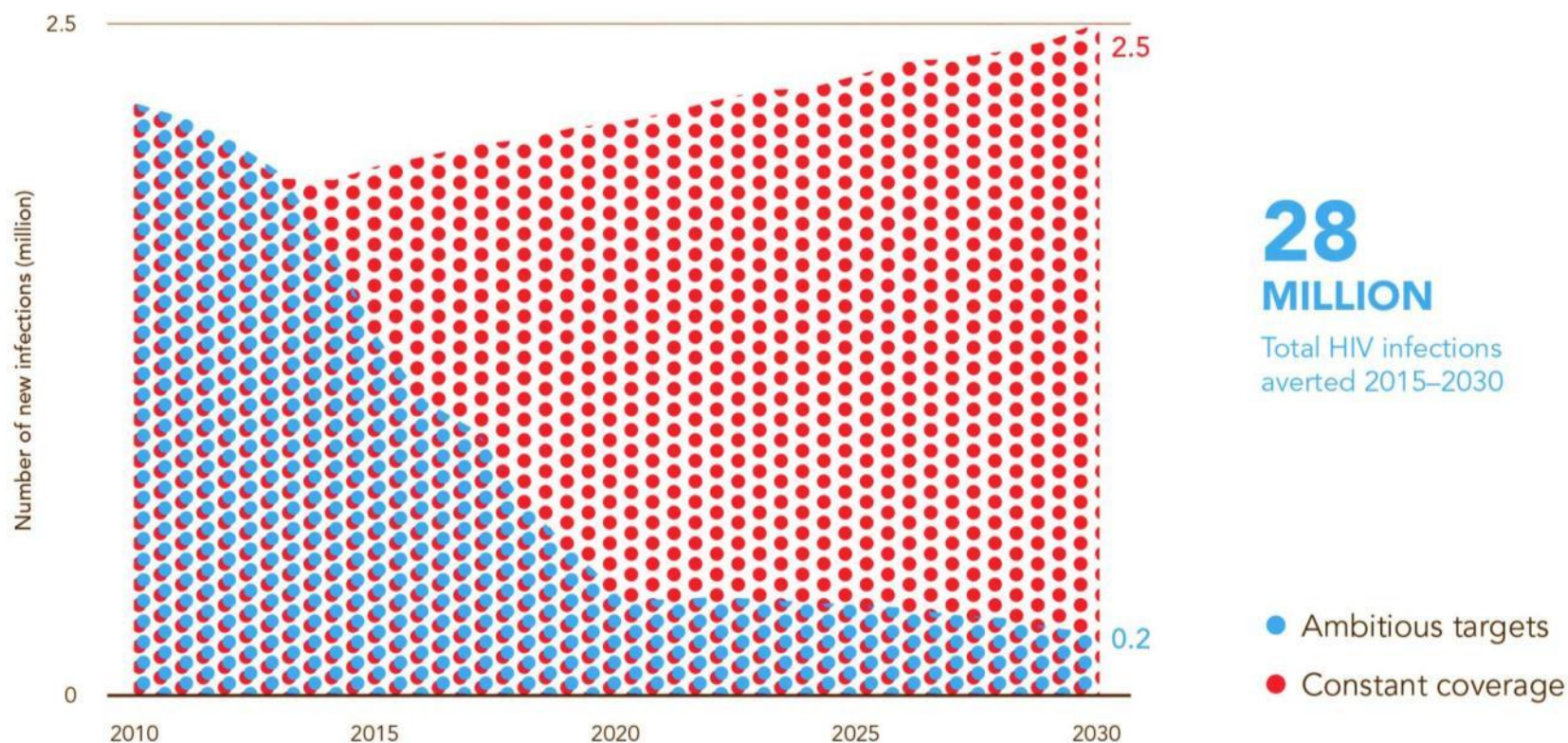
## Antiretroviral therapy coverage for adults and children, 2013



Source: UNAIDS

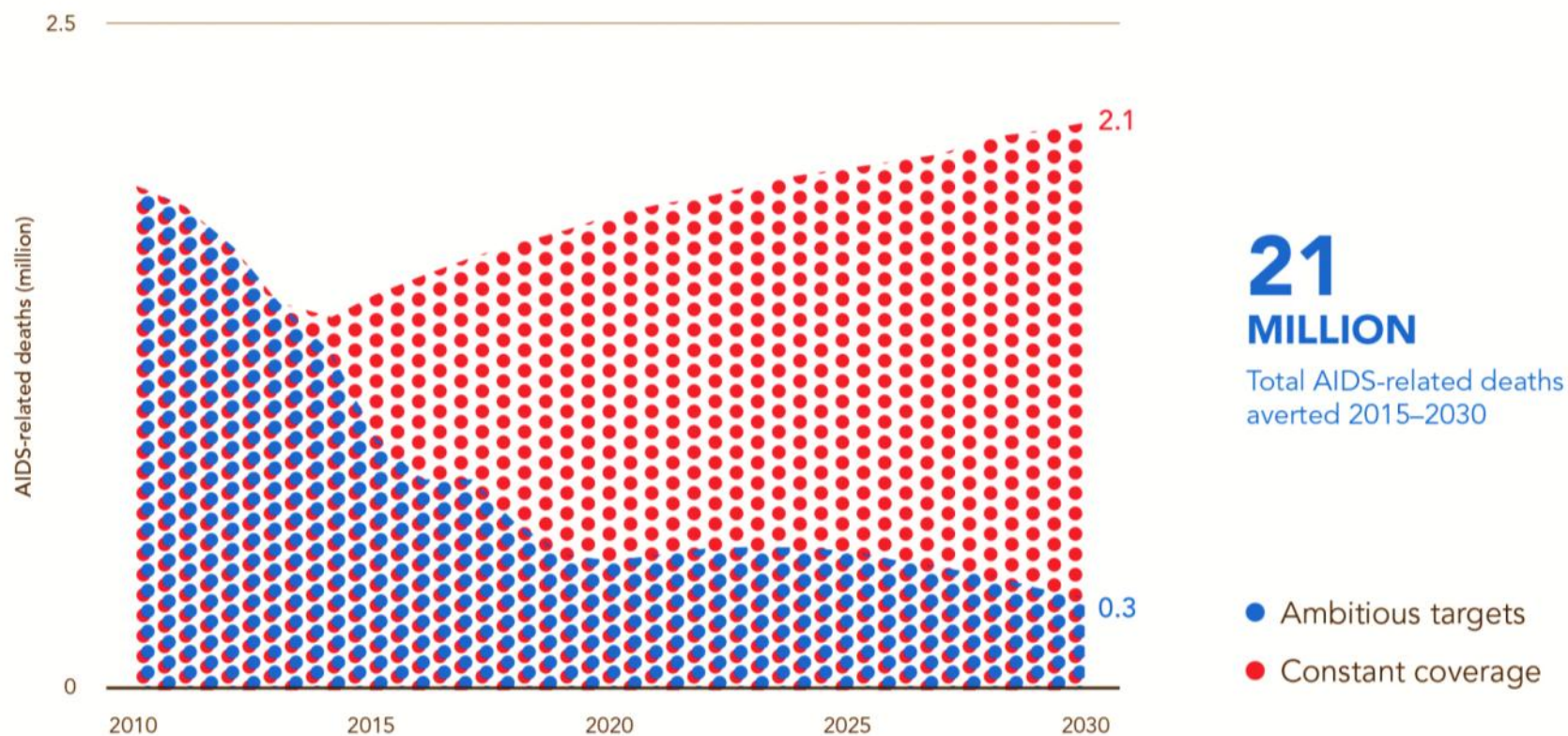


## New HIV infections in low- and middle-income countries, 2010–2030, with achievement of ambitious Fast-Track Targets, compared to maintaining 2013 coverage



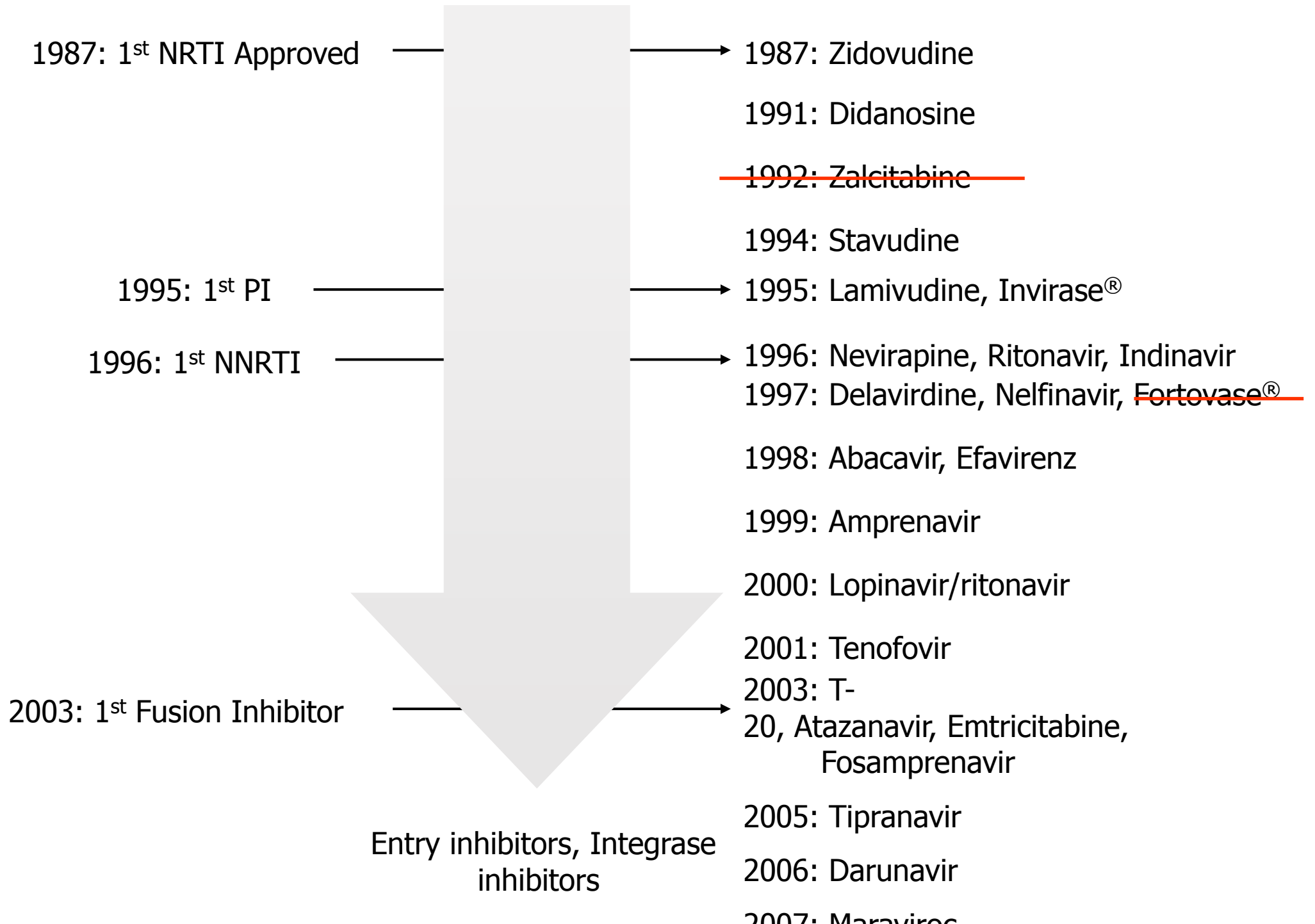
Source: UNAIDS

# AIDS-related deaths in low- and middle-income countries, 2010–2030, with achievement of ambitious Fast-Track Targets, compared to maintaining 2013 coverage



Source: UNAIDS





# Timeline of ARV Approvals



# Gydymui naudojami vaistai

Treatments listed without pictures are experimental. Treatments with asterisks are available generically in the United States.

## Multi-Class Combination Drugs

-  **Atripla** (efavirenz + tenofovir + emtricitabine)
-  **Complera** (Eviplera, rilpivirine + tenofovir + emtricitabine)
-  **Stribild** (formerly Quad) (elvitegravir + cobicistat + tenofovir + emtricitabine)
-  **Triumeq** (formerly Trii) (dolutegravir + abacavir + lamivudine)

## Nucleoside/Nucleotide Reverse Transcriptase Inhibitors (NRTIs)

(what are they?)


-  **Combivir\*** (zidovudine + lamivudine, AZT + 3TC)
-  **Emtriva** (emtricitabine, FTC)
-  **EpiVir\*** (lamivudine, 3TC)
-  **Epzicom** (Kivexa, abacavir + lamivudine, ABC + 3TC)
-  **Retrovir\*** (zidovudine, AZT, ZDV)
-  **Trizivir** (abacavir + zidovudine + lamivudine, ABC + AZT + 3TC)
-  **Truvada** (tenofovir DF + emtricitabine, TDF + FTC)
-  **Videx EC\* & Videx\*** (didanosine, ddl)
-  **Viread** (tenofovir disoproxil fumarate, TDF)
-  **Zerit\*** (stavudine, d4T)
-  **Ziagen\*** (abacavir, ABC)
  - Amdoxovir (AMDX, DAPD)
  - Tenofovir alafenamide fumarate (TAF)

## Immune-Based Therapies

(what are they?)






- Aralen** (Chloroquine phosphate)
- DermaVir** (therapeutic vaccine)
- Interleukin-7** (IL-7)
- Lexgenleuce1-T** (VRX-496; gene therapy)
- Plaquenil** (hydroxychloroquine)
- Proleukin** (aldesleukin, Interleukin-2, or IL-2)
- SB-728-T** (gene therapy)
- Vacc-4x** (therapeutic vaccine)

## Pharmacokinetic Enhancers

-  **Norvir** (ritonavir, RTV)
- Tybost** (cobicistat, GS-9350)

## Non-Nucleoside Reverse Transcriptase Inhibitors (NNRTIs)

(what are they?)

-  **Edurant** (rilpivirine, RPV, TMC-278)
-  **Intelence** (etravirine, ETR, TMC-125)
-  **Rescriptor** (delavirdine, DLV)
-  **Sustiva** (Stocrin, efavirenz, EFV)
-  **Viramune\*** and **Viramune XR** (nevirapine, NVP)
- Lersivirine** (UK-453061)



## Protease Inhibitors (PIs)

(what are they?)

-  **Aptivus** (tipranavir, TPV)
-  **Crixivan** (indinavir, IDV)
-  **Invirase** (saquinavir, SQV)
-  **Kaletra** (Aluvia, lopinavir/ritonavir, LPV/r)
-  **Lexiva** (Telzir, fosamprenavir, FPV)
-  **Norvir** (ritonavir, RTV)
-  **Prezista** (darunavir, DRV)
-  **Reyataz** (atazanavir, ATV)
-  **Viracept** (nelfinavir, NFV)
  - Prezcobix (Rezolsta, darunavir/cobicistat)
  - Atazanavir + Cobicistat

## Entry Inhibitors (including Fusion Inhibitors)

(what are they?)

-  **Fuzeon** (enfuvirtide, ENF, T-20)
-  **Selzentry** (Celsentri, maraviroc, UK-427,857)
- Cenicriviroc** (TBR-652, TAK-652)
- Ibalizumab** (TNX-355)
- PRO 140**

## Integrase Inhibitors

(what are they?)

-  **Isentress** (raltegravir, MK-0518)
-  **Tivicay** (dolutegravir, S/GSK-572)
- Vitekta** (elvitegravir, GS-9137)

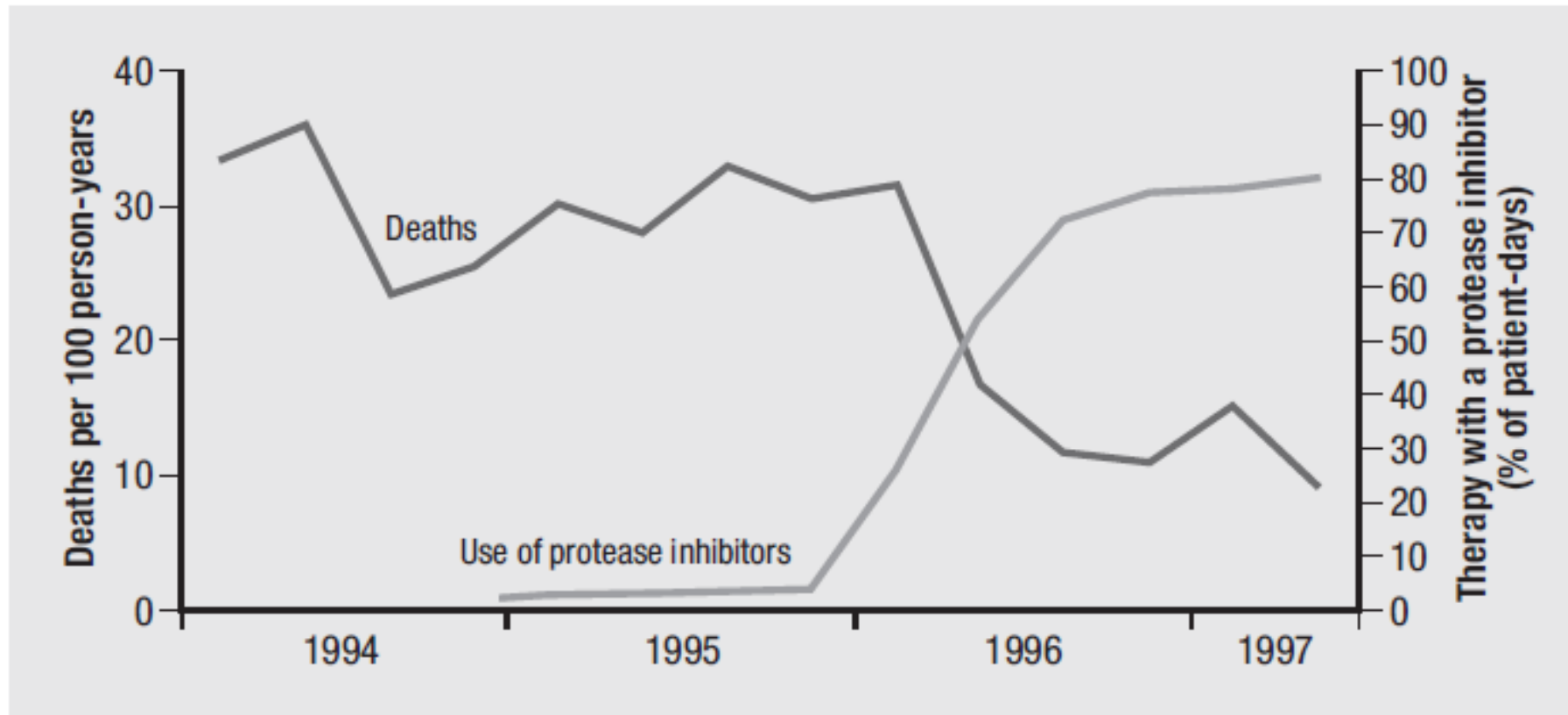


# One Pill Once Daily!



- Atripla™  
(emtricitabine/tenofovir/efavirenz)
  - Emtricitabine/tenofovir (Truvada®) + efavirenz (Sustiva®)
- Approved July 12, 2006
- First collaborative effort between 2 companies to develop combination pill for HIV treatment
- Not new drugs!

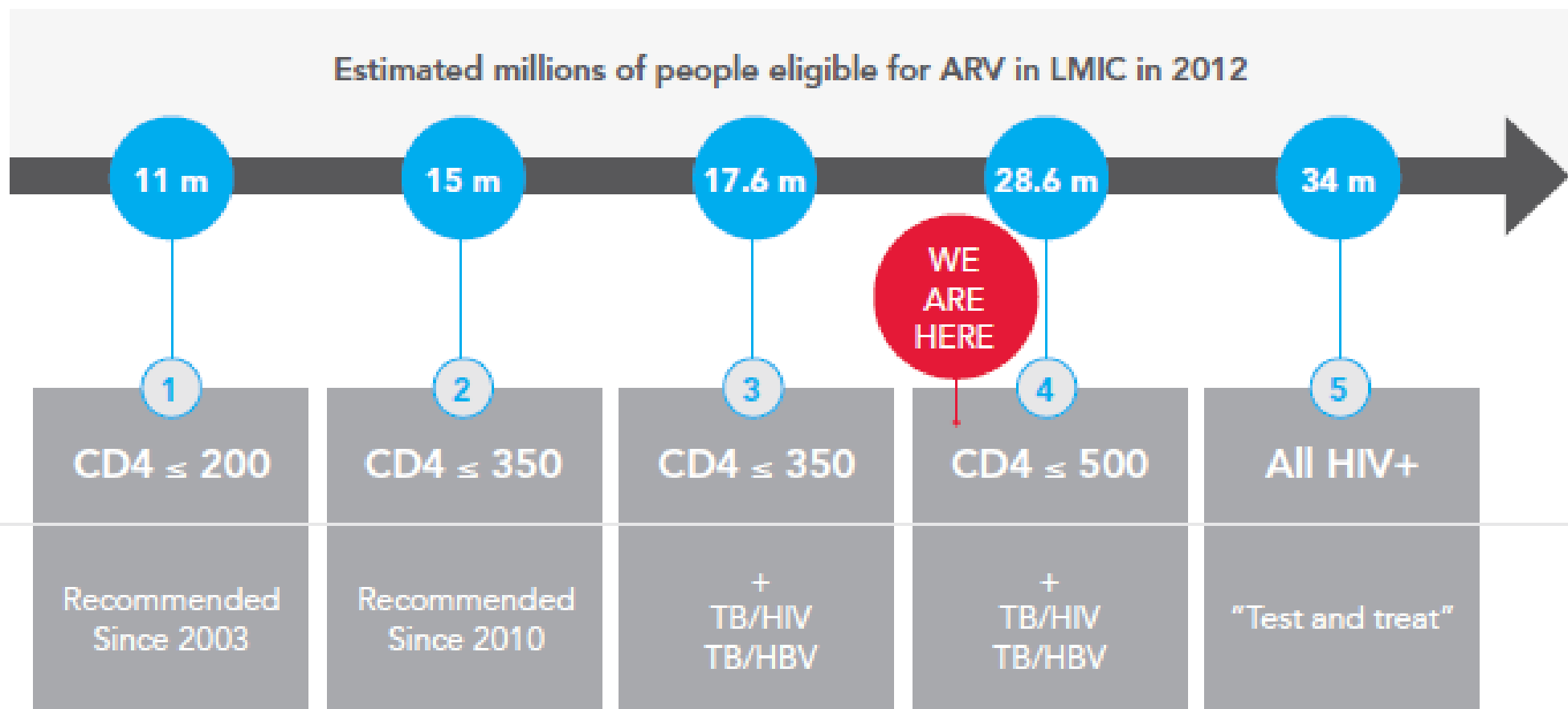
# Proteaziu inhibitoriai ir mirtys



*Reproduced with kind permission  
from Palella FJ et al. N Engl J Med  
1998;338:853-60 [9].*



## SCENARIOS OF ANTIRETROVIRAL TREATMENT ELIGIBILITY: WHO VISION

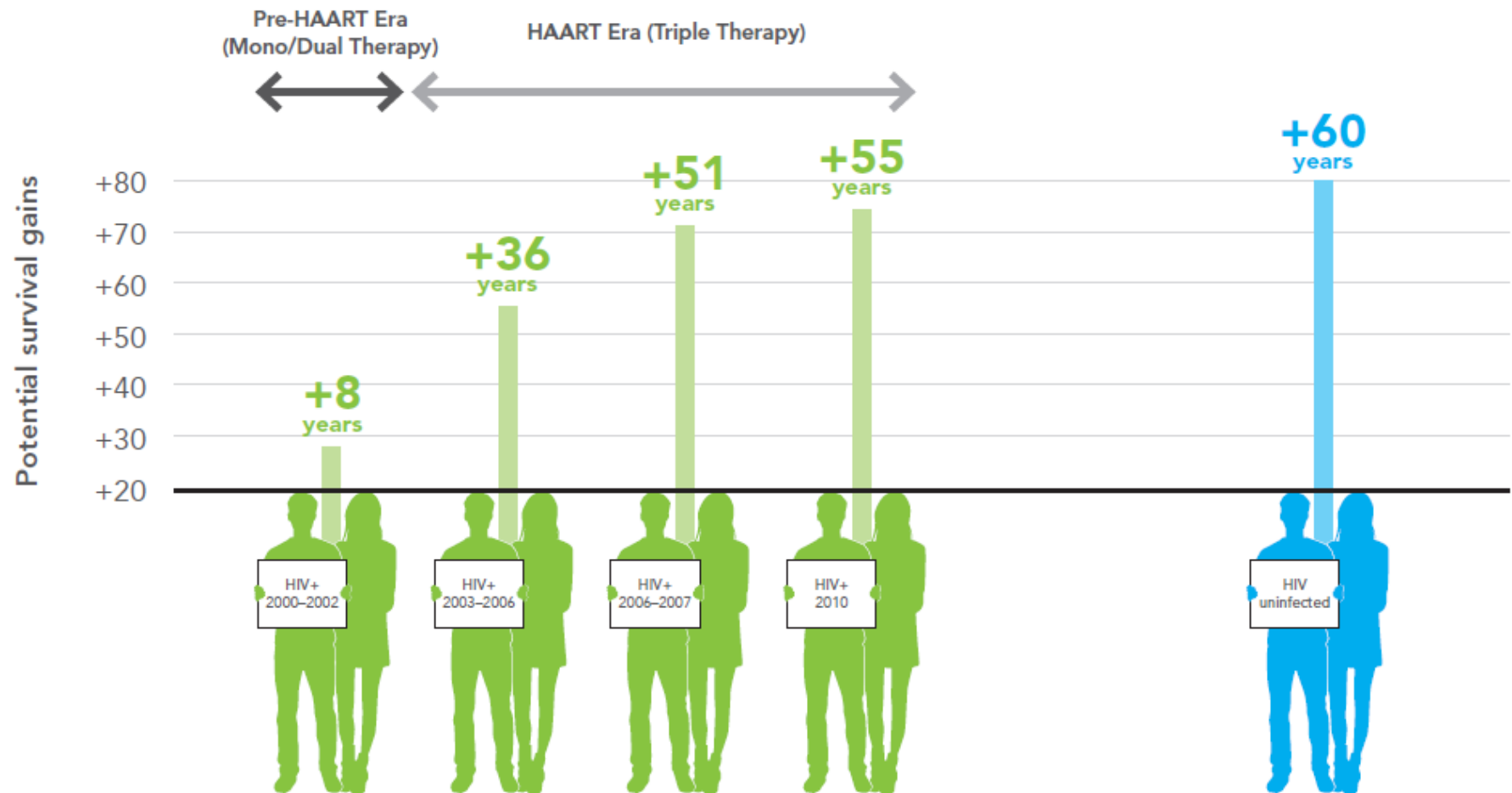


### Scenarios of ARV eligibility

ART regardless of CD4 count for:

- Serodiscordant couples
- Pregnant women
- Children < 5 years

# ŽIV gydymas ir išgyvenamumas



Expected impact of HIV treatment in survival of a 20 years old person living with HIV in a high income setting (different periods)

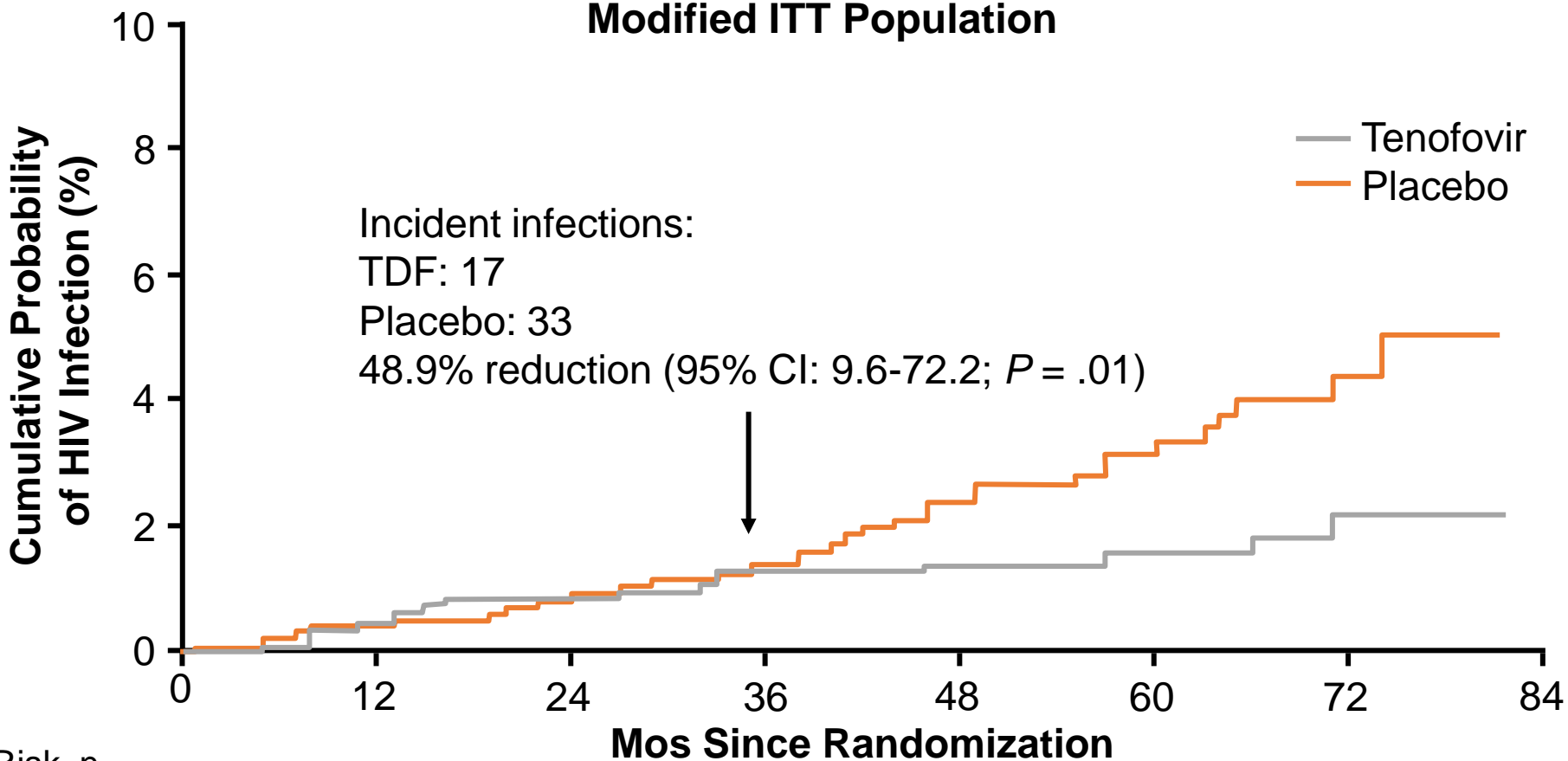
Source: Samji H et al., PLoS ONE, 2013.

# ART Prophylaxis for HIV Infection in Injection Drug Users in Bangkok, Thailand

- Randomized, double-blind, placebo-controlled, phase 3 clinical trial of tenofovir vs placebo to prevent HIV
- DOT option based on investigator discretion
- N = 2413
  - Median age, 31 yrs
  - 80% men
  - < 10% injected daily; 18% shared needles

# PrEP for IDUs: Results

**Kaplan-Meier Estimates of Time to HIV Infection in Modified ITT Population**

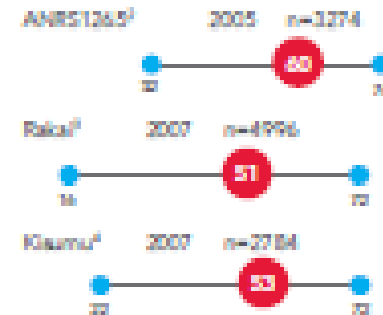


Pts at Risk, n	0	12	24	36	48	60	72	84
Tenofovir	1204	1007	933	857	736	521	241	
Placebo	1207	1029	948	844	722	500	234	

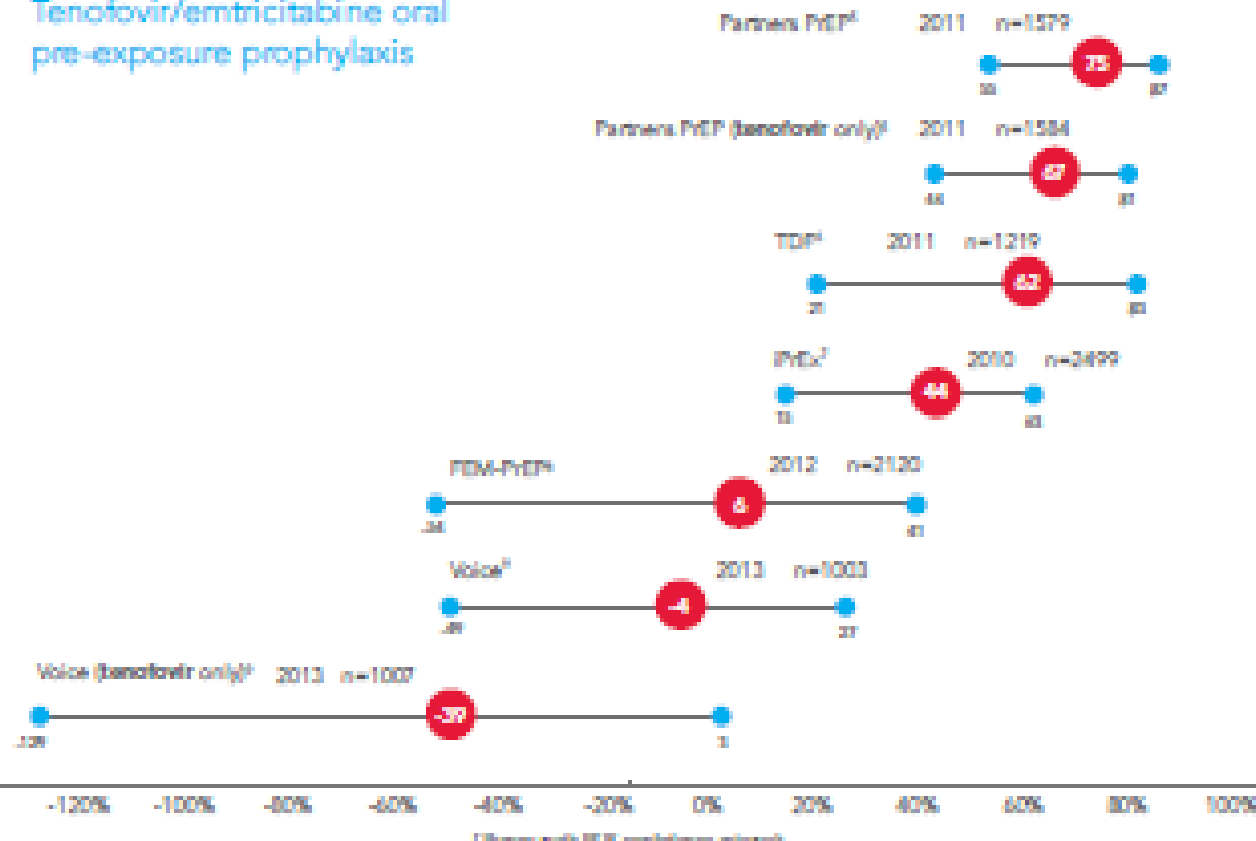
Immediate antiretroviral therapy for HIV-positive partner



Medical male circumcision



Tenofovir/emtricitabine oral pre-exposure prophylaxis



# Basic facts: Magnitude & Risk of MTCT

- 370,000 children infected in 2009; 90% through MTCT
- 2.5 million children were living with HIV in 2009; 260,000 died of AIDS
- Risk of MTCT without intervention = 15 to 45 %

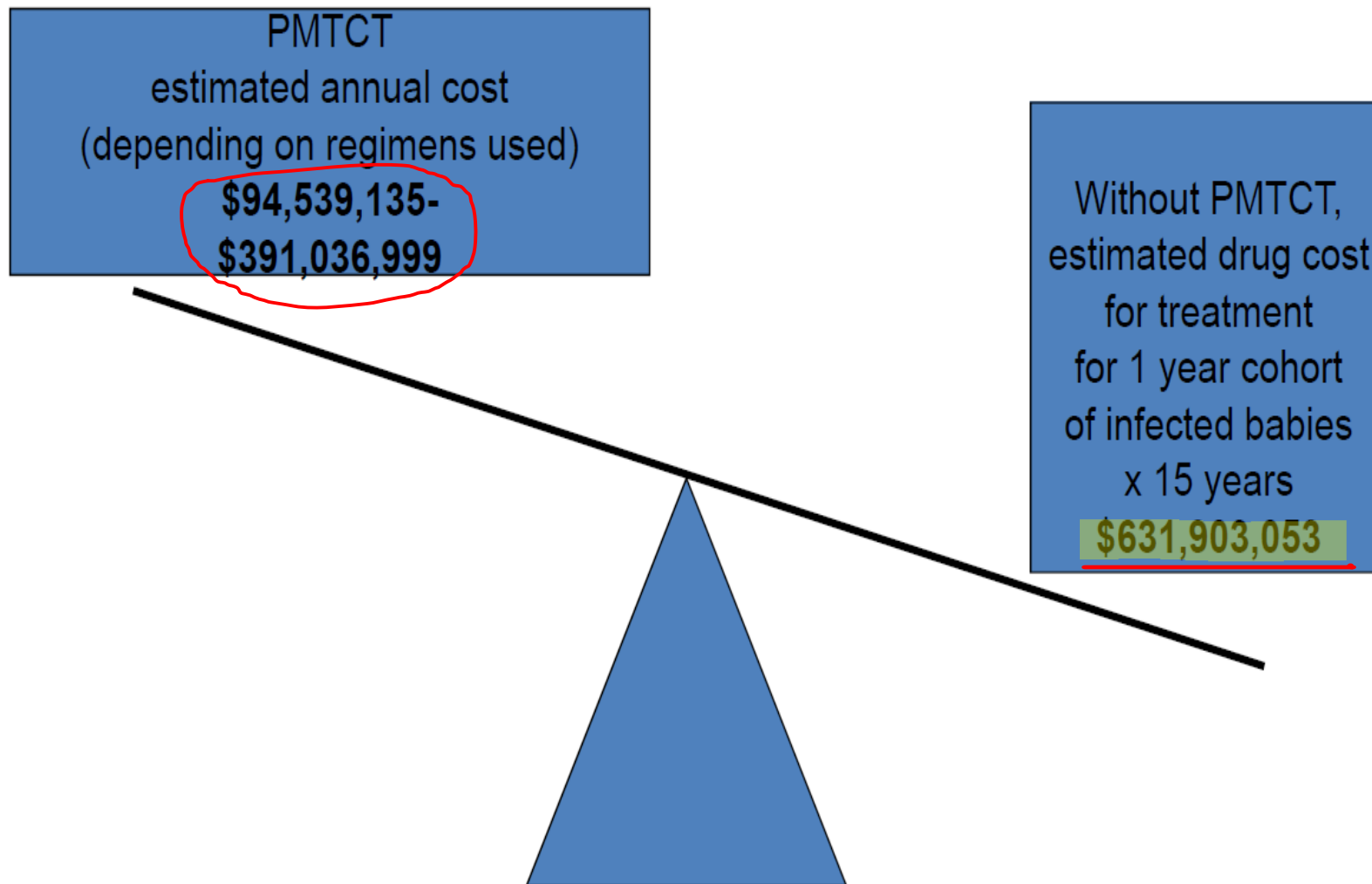
<u>Critical Time</u>	<u>Rate</u>
During pregnancy	5 to 10%
During labor and delivery	10 to 20%
During breastfeeding	10 to 20%



# Risk of MTCT with interventions

<u>Type of intervention</u>	<u>MTCT rate</u>
Short course ARV with breastfeeding	15 to 25%
Short course ARV, no breastfeeding	5 to 15%
Highly effective ARVs, with breastfeeding	< 5%
Highly effective ARVs, no breastfeeding	< 2%

# How much would it cost?: Cost of inaction



# Towards HIV Cure: experience so far

- Still without HIV relapse
  - 1 patient (“Berlin”) post–stem-cell transplant from CCR5 delta 32 negative donor
  - 1 baby (“Mississippi”) treated at birth<sup>[1]</sup>
- No consistently detectable virus in reservoir (important: both still on ART)
  - Another baby treated at birth (“Long Beach”)<sup>[1]</sup>
  - A recently infected patient in PrEP trial started on ART with HIV-1 RNA 220 c/mL<sup>[2]</sup>
- Relapsed 12 wks and 4 mos after stopping ART<sup>[3]</sup>
  - 2 patients (“Boston”) post–stem-cell transplant from wild-type donors

# Pargindiniai iššūkiai

- 78 mln. užsikėtė ŽIV, iš jų 39 mln. Mirė
- Iš 35 mln. ŽIV infekuotų - 19 mln. nežino, kad yra infekuoti ir neturi galimybės gydytis,
- 3,2 mln. Vaikų ir 2,1mln. paauglių yra ŽIV nešiotojai; iš jų trys iš keturių vaikai iš sub Sacharinės Afrikos
- Kas ketvirtas naujas ŽIV atvejis pasaulyje, tai paauglės mergaitės ir moterys sub-Sacharinėje Afrikoje
- Kitos ligos: TB, HCV

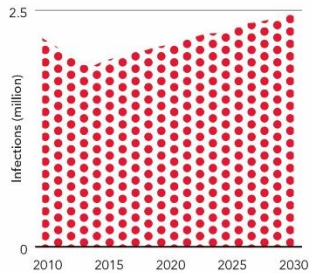
# The Fast-Track

**NO SCALE-UP**—maintain 2013 coverage levels

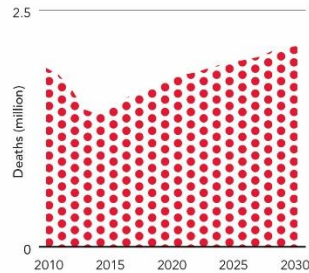


**RAPID SCALE-UP**—achieve ambitious targets

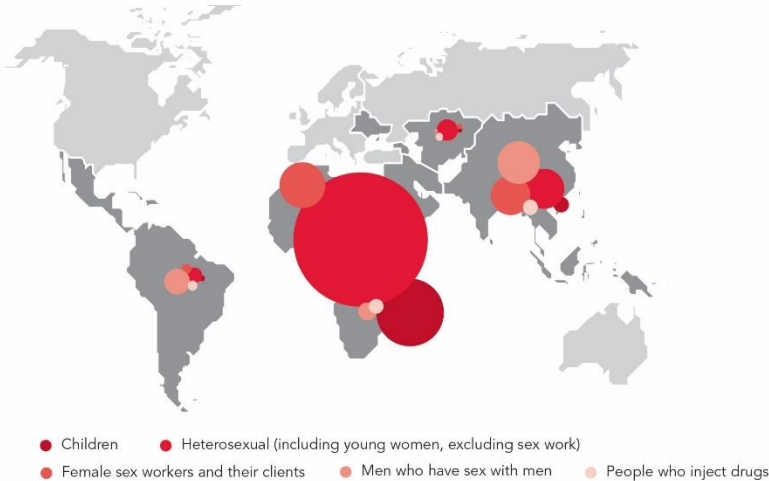
**New HIV infections in low- and middle-income countries (millions)**



**AIDS-related deaths in low- and middle-income countries (millions)**



**New HIV infections in different population groups, low- and middle-income countries, 2030**



**MAJOR BENEFITS:**

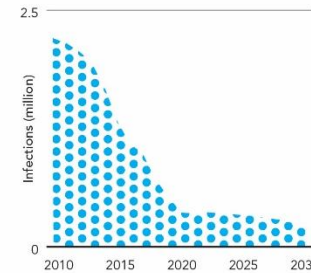
**21 MILLION**  
AIDS-related deaths averted by 2030

**28 MILLION**  
HIV infections averted by 2030

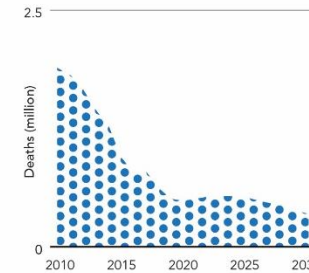
**5.9 MILLION**  
infections among children averted by 2030

**15-FOLD**  
return on HIV investments

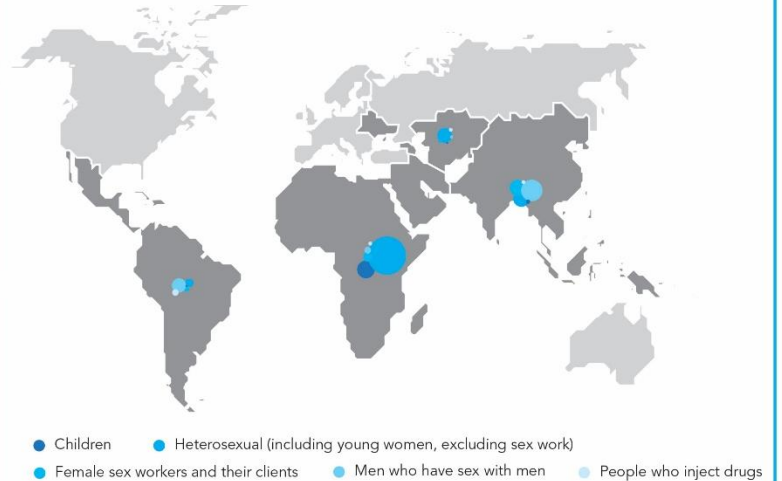
**New HIV infections in low- and middle-income countries (millions)**



**AIDS-related deaths in low- and middle-income countries (millions)**



**New HIV infections in different population groups, low- and middle-income countries, 2030**



**Rapid scale-up of essential HIV prevention and treatment approaches will enable the response to outpace the epidemic.**



**2030** Without scale-up, the AIDS epidemic will continue to outrun the response, increasing the long-term need for HIV treatment and increasing future costs.

Source: UNAIDS

# Keletas „optimistinių“ minčių pabaigai:

- Gydymas tapo pagrindiniu prevencijos komponentu;
- Vaistų daugėja;
- Nauji vaistai mažiau toksiški, patogesni vartoti;
- Daugėja duomenų apie įvairius gydymo režimus;
- Daugėja naujų vaistų klasių: vakcinos, antikuniai t.t.



**Ačiū už dēmesj!**